

**Abstract**

A method is provided for using optical time-domain reflectometry (OTDR) with a bi-directional optical transmission system that includes a plurality of terminals interconnected by first and second unidirectional optical transmission paths having at least one repeater therein. The method begins by transmitting a probe signal from a first terminal through the repeater over the first optical transmission path. A returned OTDR signal is received over the first optical transmission path in which status information concerning the first optical transmission path is embodied. The returned OTDR signal is transformed to a digitized electrical signal and the digitized electrical signal is transformed to an optical data signal. Finally, the optical data signal is transmitted over the second optical transmission path to the first terminal for extracting the status information embodied therein.